REMARKS

In response to the official action dated April 1, 2010, Applicant has addressed the informalities in the specification by placing the language form claims 8 and 12 back into paragraphs 5 and 18 of the specification. Most notably the recitation that a maximum oxygen content amounts to approximately 3005 is now in the specification, as is the language that the joining of the plates takes place with the application of heat at a mechanic pressing force of between 20 and 2500 bar.

Further the objections to the claims under 35 US 112, second paragraph have been correct in all of the claims mentioned in the action.

For clarification purposes and in order to get a better or clearer understanding of the invention over the cited art, we modified claim 1.

It is an object of the invention to improve manufacturing of coolers, cooler elements or heat sinks in order to get high quality products. The coolers comprising a plate stack made of a plurality of plates or boards bonded with each other by application of heat, especially by DCB bonding methods, or by the so-called active soldering method. These bonding methods are very well known to persons skilled in art and are also referred to in the specification of this application, for example in paragraphs [0026] - [0028] of the specification.

Improvement of the quality of the coolers, cooler elements or heat sinks is obtained by post-treatment of the bonded plate stacks that means by post-treatment after bonding. The post-treatment is performed inside a post-treatment chamber (9) in which the bonded plate stacks or the coolers, cooler elements and heat sinks (as finished or nearly finished products) are inserted and the interior of which is subjected to the inert gas atmosphere with the inert gas pressure between 200 and 2000 bars and in which the bonded plate stacks are treated at the desired post-treatment temperature.

The result of this post-treatment is, that the bonding area in between adjoining plates of the bonded plate stack is compressed such that micro-cavities (8) which may be formed

in the bonding area between two adjoining plates during bonding step and the disadvantages resulting from such cavities, especially corrosion of the metal or copper due to a liquid cooling medium inside the cooler, are removed or at least reduced.

Please also note, that the coolers or cooler elements or heat sinks are not subjected to the inert gas pressure and post-treatment temperature during the bonding process step and that the bonded plate stacks (coolers, cooler elements or heat sinks) are not placed into an envelope or canister or vacuum envelope or canister the outside of which is submitted to a gas pressure.

As far as claim 1 is concerned, the Examiner had referred to US 6,068,179 (Fowler), US 5,836,506 (Hunt) and EP 1136782 A1 (Matsumoto) and US 3,904,101 (Beltran). This cited art does not teach or suggest a method comprising the claimed process steps of claim 1.

The Examiner is correct in saying that US 6,068,179 (Fowler) and EP 1136782 B1 disclose method for manufacturing coolers in form of plate stacks by diffusion bonding of several plates or sheets.

But US 6,068,179 and EP 1136782 B1 do not disclose either a post-treatment of bonded plate stacks in an inert gas atmosphere or a post-treatment of bonded plate stacks forming coolers, cooler elements or heat sinks or a post-treatment at a pressure between 200 and 2000 bar and that post-treatment below the joining temperature, that means at a post-treatment temperature which is approximately 95-99% or at least 50% of the joining temperature.

US 5,836,506 (Hunt) and US 3,904,101 (Beltran) teach specific bonding methods, but not a post-treatment of a finished or nearly finished product.

US 5,836,506 (Hunt) teaches an improved method for making a bonded sputter target/backing plate assembly by bonding backing plates (for example made of aluminum) to target plates (for example made of titanium) at high pressure and at a bonding temperature somewhat below the melting point of the metal used for the backing plate. The pressure is applied to the target/backing plate assembly by means of a ram or by positioning the target backing plate assembly before bonding inside a closed vacuum canister, which is subjected to the bonding temperature and to the bonding pressure by an outer gas atmosphere on its outside so that the

pressure deforms the canister in such away, that the target plate and the backing plate inside the canister are pressed against on another with the bonding pressure of the outer gas.

At the inventive process, there is no need for exerting mechanical pressure on to the plate stack, for example, by ram or to put the plate stack inside an vacuum envelope or canister during post-treatment, as the plates had been already bonded together to from the bonded plate stack in a process step before post-treatment.

US 3,904,101 (Beltran) teaches a specific bonding method for bonding an oxidation resist and anti corrosion resistant sheet plating to a convex substrate by diffusion bonding. Again the plating/substrate assembly is subjected to a pressure during bonding and for this reason the plating/substrate assembly is positioned inside the vacuum envelope. The US 3,904,101 does also not teach a post-treatment of a finished or nearly finished product. It does also not teach the specific post-treatment pressure and temperature claimed in claim 1 of this application.

In view of the clarifications to claim 1 and the arguments and explanations above, timely reconsideration and approval of claims 1-18 is requested. If any questions remain, please do not hesitate to contact the undersigned.

Respectfully submitted,

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